

# Argon Laser Treatment of Strawberry Hemangioma in Infancy

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*Argon laser therapy is effective for removing port-wine stains and for reducing cutaneous vascular and pigmented lesions. Strawberry hemangiomas, being much thicker lesions than port-wine stains, were considered not appropriate for argon laser treatment. Using argon laser therapy in 13 cases of strawberry hemangioma, we achieved poor to dramatic results.*

(Achauer BM, Vander Kam VM: Argon laser treatment of strawberry hemangioma in infancy. West J Med 1985 Nov; 143:628-632)

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Since early 1970 argon laser therapy has been the most effective for removing port-wine stains, the blue green light (488 to 520 nm) corresponding with the maximum absorption of both hemoglobin and melanin. The argon laser has been useful for reducing cutaneous vascular and pigmented lesions. Laser light penetrates intact epidermis—usually at less than 1 mm—until its energy is absorbed by the lesion.

Strawberry hemangioma, the most common vascular tumor seen in infancy, is distinguished by its tendency to involute.<sup>1</sup> The strawberry lesion usually presents as a flat lesion a few days after birth. Growth may be rapid, with maximum size generally being reached at about one year. The lesion is characterized by its bright red color, raised texture and lobular appearance.<sup>2</sup> Strawberry marks are somewhat more common in premature infants, and there is a greater incidence in female than male infants. About 50% of the lesions regress by age 5 years and 70% by age 7.<sup>3</sup> Strawberry hemangiomas are much thicker lesions than port-wine stains and, therefore, theoretically not ideal for argon laser treatment.

Apfelberg and co-workers reported three cases treated by the argon laser and noted cessation of rapid growth and induction or resolution.<sup>4</sup> Hobby reported six cases treated, with improvement in all cases.<sup>5</sup> Argon laser therapy has been established as the treatment of choice for port-wine hemangiomas, but is relatively contraindicated for port-wine stains in children because of the greater risk of scarring.<sup>6</sup>

Hobby postulated that the laser treatment might be used when the lesion is first noted, before it has time to grow.<sup>5</sup> If

these lesions could be treated before attaining significant size, deforming, complicated tumors may be totally prevented. Our encouraging experience with 13 patients treated with the argon laser is presented.

## Materials and Methods

The Cooper Medical 770 argon laser was used with a 2-mm fiberoptic hand-held wand. Depending on the size and density of the lesion, 1.0 to 2.0 W was delivered. When the eyelid was involved, protective eye shields were inserted into the eye after the instillation of topical ophthalmic anesthetic. All persons in the room wore protective eye covering. Treatments were done on an outpatient basis under local or, in two cases, general anesthesia. Both ethyl chloride and 1% lidocaine (Xylocaine) hydrochloride without epinephrine were used as local anesthetic agents. The wand was held about 1.5 cm from the lesion and advanced over the lesion as blanching occurred. Antibiotic ointment and sterile dressing were then applied to treated areas.

Posttreatment results were evaluated and categorized as excellent to essentially good, good to 50% improved, fair to 25% to 50% smaller or poor to less than 25% changed or with complications. Patient information, indications for treatment, details of treatment and results are presented in Table 1.

## Discussion

Despite the fact that strawberry hemangiomas may involute, there are medical and occasional psychological indications for treatment before spontaneous involution. When the

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# ARGON LASER TREATMENT

TABLE 1.—Clinical Features and Results of Argon Laser Treatment in 13 Patients With Strawberry Hemangioma

Patient	Age (mos)	Sex	Indication	Location	Size (cm)	Watts Delivered	Time (sec)	Results	Follow-up (mos)
1 .....	11	M	Bleeding	Scalp	2.5 x 2.5	1.6	87	Excellent	12
2 .....	10	F	Speech	Lip	2.0 x 2.0	1.8	108	Fair	12
3 .....	5	F	Bleeding	Groin	5.0 x 0.7	1.8	506		
					1.8 x 1.6	1.6	231*	Excellent	10
4 .....	2½	M	Growth	Shoulder	5.0 x 5.0	1.8	506	Fair	9
5 .....	5	F	Bleeding	Lip	2.5 x 2.5	1.8	136	Fair	6
6 .....	12	F	Growth	Shoulder	4.0 x 4.0	1.8	443	Good	6
7 .....	24	M	Speech	Lip	2.0 x 4.0	1.8	284	Good	5
8 .....	36	F	Vision	Face	5.5 x 8.0	1.8	212		
						1.8	512*	Good	4
9 .....	6	M	Growth	Forehead	1.5 x 2.5	1.8	57	Excellent	3
10 .....	12	F	Bleeding	Neck	20.0 x 30.0	1.8	593	Poor	2
11 .....	5½	F	Vision	Eyelid	2.5 x 2.5	1.8	32	Excellent	2
12 .....	6½	F	Ulceration	Neck	2.5 x 2.5	1.8	162	Good	1
13 .....	3	F	Bleeding	Nose	3.75 x 3.75	1.8	...	Poor	3

\*Case treated with two-stage laser application.



Figure 1.—Case 8: Left, Extensive facial hemangioma with some visual field obstruction. Middle, Eschar postlaser treatment, which persists from ten days to three weeks. Right, Four months postlaser treatment. Note improved visual field.

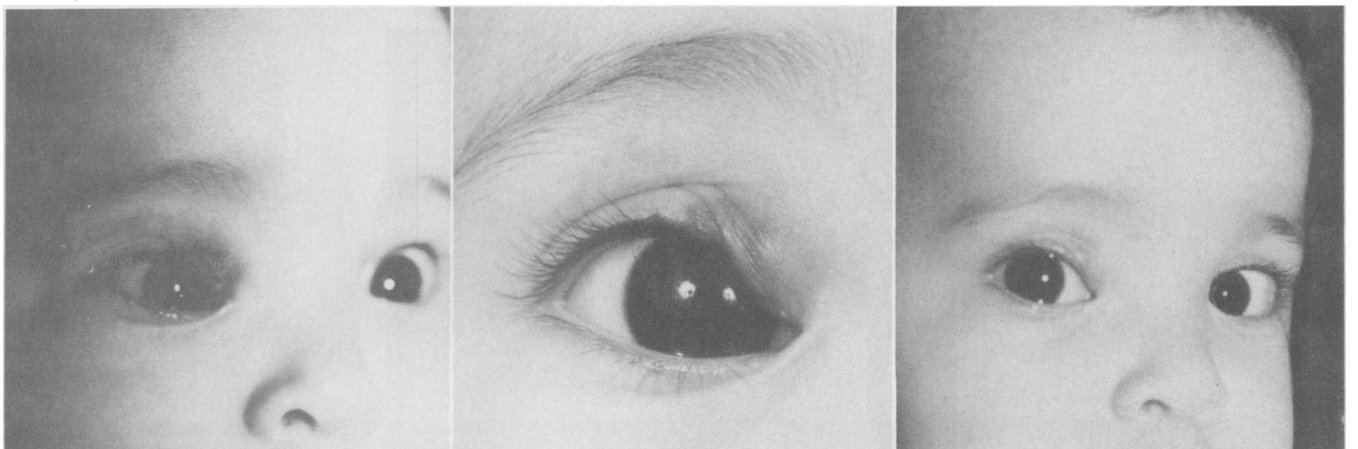


Figure 2.—Case 11: Left, Strawberry hemangioma in a 5½-month-old infant obstructing visual field; before laser treatment. Middle, One month postlaser treatment. Right, One month postsurgical excision of redundant skin.

lesion interferes with a vital function such as breathing, eating or vision, treatment is indicated. If the lesion impinges on surrounding tissue, becomes ulcerated, infected or bleeds, treatment may also be desirable.<sup>7</sup> Traditional treatments include x-ray, steroids and surgical excision.

Complications of these treatments include damage to surrounding tissues, regrowth of tumor after termination of drug

therapy and objectionable scar. All of the above treatments have limited success. In our series, 2 of the 13 patients had prior treatment (systemic steroids for cases 8 and 12).

If a treatment were available that was simple, inexpensive and had very little risk, virtually all of the lesions could be treated, saving the patient and family a great deal of travail.

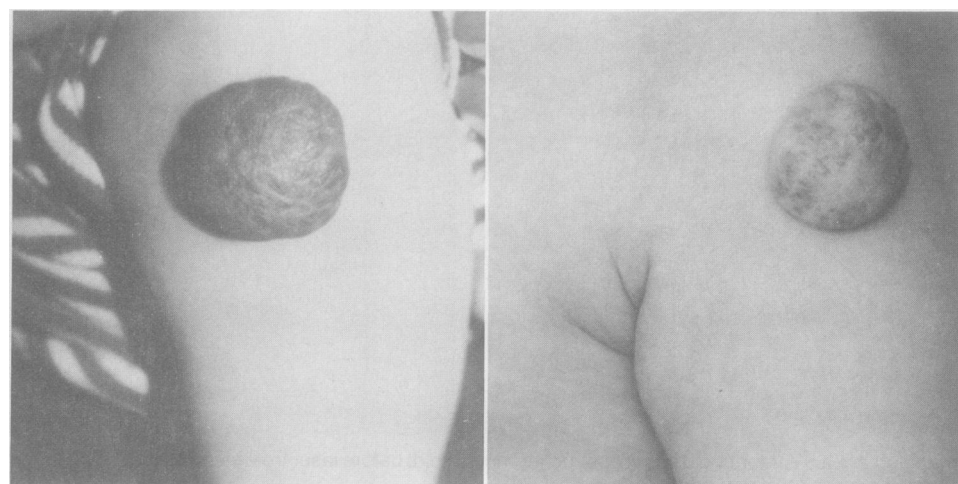
Our series of 13 cases showed poor to dramatic results



**Figure 3.**—Case 7: **Left**, Prelaser treatment of lip lesion, which interferes with speech and causes drooling. **Right**, Photo taken at five-month follow-up.



**Figure 4.**—Case 3: **Left**, This ulcerated inguinal hemangioma was particularly painful, being constantly macerated by urine. **Right**, Photo taken ten months posttreatment.

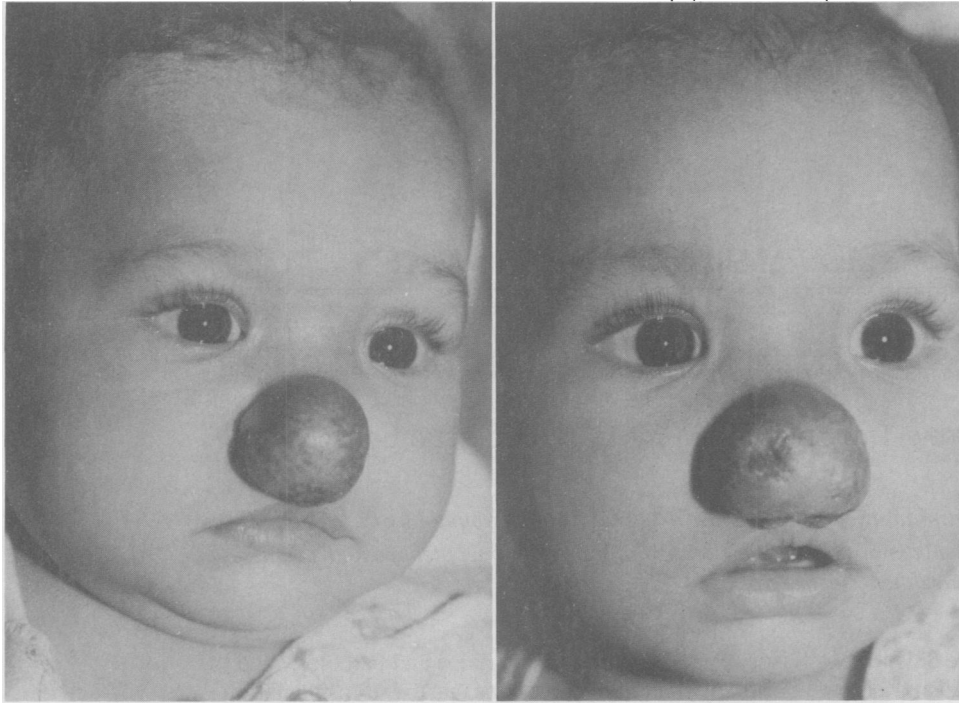


**Figure 5.**—Case 6: **Left**, Photo taken before treatment of hemangioma of the arm. **Right**, Six months postlaser treatment.

(Table 1) and only one complication—seizure due to intravascular administration of lidocaine. The lesions in cases 8 (Figure 1) and 11 (Figure 2) decreased in size without aggravation of existing vision problems. In cases 2, 5 and 7 (Figure 3), treatment resulted in reduction of lesions, thereby decreasing problems associated with eating and speech. Case 3 (Figure 4), showing a particularly painful, macerated lesion, was successfully treated with a two-staged laser application. Case 6 (Figure 5) is an example of a fair result, whereas case 13 (Figure 6) shows a poor result. An area in the central

portion of the hemangioma is blanched, but the overall size appears to have increased with age.

Cases 1, 3 (Figure 4), 9 (Figure 7) and 11 (Figure 2) all had excellent results from the treatment. It is interesting to note that these lesions are small, ranging in size from  $1\frac{1}{4}$  by  $2\frac{1}{2}$  cm to  $2\frac{1}{2}$  sq cm, and the largest lesion had the least improvement. We agree with Hobby's observation that lesions treated early may respond better. It would be exciting to treat evolving lesions in the neonatal period. If this became routine, then complicated tumors might be "prevented."



**Figure 6.**—Case 13: **Left**, A photo of a 3-month-old infant, prelaser treatment, showing a strawberry hemangioma of the nose. **Right**, No response occurred in this case, three months follow-up.



**Figure 7.**—Case 9: **Left**, A 6-month-old infant with a typical raised strawberry hemangioma of the forehead. **Right**, One-year follow-up with mild skin pigment change noted.

Healing required two to four weeks and was of parental concern in a few cases.

## Summary

Strawberry hemangiomas are usually very small to nonexistent at birth. They undergo a rapid increase in size in the first few weeks of life. If they could be treated before attaining significant size, deforming, complicated tumors might be totally prevented.

It is possible that a great deal of patient and family morbidity can be avoided by an inexpensive, uncomplicated outpatient procedure. Argon laser treatment is not definitive treatment in most cases, but seems appropriate palliation for a self-limiting condition. Scarring, the major complication of

laser treatments for port-wine stain, has not been seen in any of our cases or the other reported cases.

## REFERENCES

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## Medical Practice Questions

EDITOR'S NOTE: From time to time medical practice questions from organizations with a legitimate interest in the information are referred to the Scientific Board by the Quality Care Review Commission of the California Medical Association. The opinions offered are based on training, experience and literature reviewed by specialists. These opinions are, however, informational only and should not be interpreted as directives, instructions or policy statements.

### Bone Marrow Transplantation for Lymphoblastic Leukemia

#### QUESTION:

*Is bone marrow transplantation accepted medical treatment for lymphoblastic leukemia? If both autologous and donor bone marrow transplantation are accepted medical practice, is one preferred over the other?*

#### OPINION:

In the opinion of the Scientific Advisory Panels on Internal Medicine and Pathology and the Committee on Organ and Tissue Transplantation, allogeneic bone marrow transplantation is considered established medical treatment for selected patients with acute lymphoblastic leukemia who fail to be cured by conventional chemotherapy. For adults younger than 50 years of age during first remission or in second relapse, transplantation using allogeneic bone marrow from a HLA-matched sibling is accepted as effective therapy. However, with recent improvements in the results of chemotherapy, it is uncertain whether transplantation is superior to conventional chemotherapy for patients in first remission. For children in second remission, bone marrow transplantation is definitely the treatment of choice, if a suitable HLA-matched sibling donor is available.

Patients at high risk of recurrence and who lack a HLA-identical donor have received transplants from autologous bone marrow as well as from partially matched donors. The former has been attempted using physical, pharmacological and immunological techniques to deplete marrow of leukemic blood cells. Autologous bone marrow transplantation is currently being used in specialized centers for selected patients in second and subsequent remission who do not have a suitable allogeneic donor and who have no other hopeful alternative when chemotherapy fails. Though preliminary results using autologous bone marrow transplants have been encouraging, the number of patients treated thus far has been small. Further clinical investigation is required to fully determine the long-term efficacy of this treatment before it can be accepted as standard medical practice.